

REMARKS

In the Office Action mailed August 20, 2007 (hereinafter "Office Action"), Claims 1-3, 7, 10-12, 16-18, 22, 25-27, 31-33, 37-42, 46-48, 53-54, and 57 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Aversa et al., Load Balancing a Cluster of Web Servers Using Distributed Packet Rewriting, January 1999 (hereinafter "Aversa"), in view of Snoeren et al., TCP Connection Migration (hereinafter "Snoeren"). Claims 4-6, 19-21, 34, and 43 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Aversa in view of U.S. Patent No. 6,334,153, to Boucher et al. (hereinafter "Boucher"). Claims 36, 45, 49-52, 55-56, and 58 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Aversa and Boucher as applied to Claim 4 in view of Snoeren. Applicant respectfully traverses these rejections.

In response to the Office Action, Applicant has amended Claims 1, 4, 10, 16, 19, 25, 49, 53, and 58. Claims 36 and 45 have been canceled. Claims 60-68 have been added. Thus, Claims 1-7, 10-12, 16-22, 25-27, 31-34, 37-43, 46-58, and 60-68 are pending in this application. Applicant has carefully considered the issues raised in the Office Action and respectfully requests reconsideration and allowance of the claims in view of the remarks set forth below.

Rejections Based on Aversa in View of Snoeren Under 35 U.S.C. § 103(a)

Claims 1-3, 7, 31-33, and 60

The Office Action recited various portions of Aversa and Snoeren as applying to the features of Claim 1. Applicant respectfully disagrees, and submits that neither Aversa nor Snoeren teaches or suggests a first computing device that, when it is not selected to service the client, migrates the unbound data structure associated with the connection to the selected computing device in a manner *transparent to the client*.

Snoeren describes a technique for migrating an active TCP connection. Snoeren, Abstract. This technique involves a negotiation between two hosts during the initial connection that allows the connection to be migrated. See Snoeren, p. 5 ("In order for a connection to by [sic] migrateable, the correspondent hosts must first exchange Migrate-Permitted Options during

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the SYN handshake.") To migrate the connection, one of the hosts creates a second connection, the application is associated with the new connection, and the first connection is dropped. See Snoeren, pp. 5-6; 9-10. In fact, the collaboration of both hosts in negotiating a cryptographic cookie and exchanging Migrate-Permitted options during the establishment of the initial connection is a key feature of Snoeren. See Snoeren, p. 2. Snoeren therefore teaches away from the current invention, which performs its tasks in a manner *transparent to the client*.

Further, the Office Action admitted that Aversa "does not expressly disclose that when the first computing device is not selected to service the client, migrate the unbound data structure associated with the connection to the selected computing device." Office Action, p. 8. Thus, neither Aversa nor Snoeren teaches or suggests a first computing device that, when it is not selected to service the client, migrates the unbound data structure associated with the connection to the selected computing device in a manner transparent to the client.

Applicant respectfully submits that withdrawal of the 35 U.S.C. § 103(a) rejection with respect to Claim 1 is merited. Rejected Claims 2, 3, 7, 31-33, and 60 depend from Claim 1. Applicant respectfully submits that Claims 1-3, 7, 31-33, and 60 are allowable at least by virtue of this dependency as well as by virtue of the other limitations set forth therein. In particular, with respect to Claim 60, neither Aversa nor Snoeren teaches or suggests that the first computing device is an intelligent network interface controller.

Further, the Office Action asserts that multiple features from Claims 1, 2, 3, 7, and 31 are inherently disclosed by the "Transmission Control Protocol" specification (hereinafter "TCP Specification") and the allegedly admitted prior art (hereinafter "AAPA"). Applicant respectfully traverses these assertions. Specifically, Applicant respectfully submits that neither the TCP Specification nor the AAPA inherently discloses an *unbound* data structure of any type, much less a system that stores an unbound data structure (Claim 1), a system that binds a previously unbound data structure (Claim 1), an unbound data structure that includes a group of sequence numbers (Claim 2), a bound data structure including a client IP address, a client port, a

first computing device IP address, and a first computing device port (Claim 3), or an unbound data structure comprising a connection endpoint (Claim 31). Applicant also respectfully submits that neither the TCP Specification nor the AAPA inherently discloses generating an acknowledgement to the client that does not result in establishing a connection between the first computing device and the client (Claim 7).

Accordingly, Applicant respectfully submits that Claims 1-3, 7, 31-33, and 60 are patentable over the cited prior art and respectfully requests withdrawal of the rejection of these claims under 35 U.S.C. § 103(a).

Claims 10-12, 37-39, and 62

The Office Action recited various portions of Aversa and Snoeren as applying to the features in Claim 10, with substantially the same reasoning as for Claim 1. Office Action, pp. 11-12. Applicant respectfully disagrees, and submits that neither Aversa nor Snoeren teaches or suggests a first computing device configured to, in a manner *transparent to the client*, selectively dissociate the application of the first computing device from the data structure; and subsequently output a reference to the data structure associated with the connection.

As argued above with respect to Claim 1, Applicant respectfully submits that Snoeren teaches away from a device that migrates connections in a manner *transparent to the client*, as the two hosts described in Snoeren must collaborate in migrating the connection. Also, similar to Claim 1, the Office Action admitted that "Aversa does not expressly disclose selectively dissociating the application of the first computing device from the data structure and subsequently outputting a reference to the data structure associated with the connection[.]" Office Action, p. 12. Therefore, Applicant respectfully submits that withdrawal of the 35 U.S.C. § 103(a) rejection with respect to Claim 10 is merited.

Rejected Claims 11, 12, 37-39, and 62 depend from Claim 10. Applicant respectfully submits that Claims 11, 12, 37-39, and 62 are allowable at least by virtue of this dependency as well as by virtue of the other limitations set forth therein. In particular, with respect to Claim 62,

neither Aversa nor Snoeren teaches or suggests that the first computing device is an intelligent network interface controller.

Accordingly, Applicant respectfully submits that Claims 10-12, 37-39, and 62 are patentable over the cited prior art and respectfully requests withdrawal of the rejection of these claims under 35 U.S.C. § 103(a).

Claims 16-18, 22, 40-42, and 63

The Office Action recited various portions of Aversa and Snoeren as applying to the features in Claim 16, with substantially the same reasoning as for Claim 1. Office Action, p. 13. Applicant respectfully disagrees, and submits that neither Aversa nor Snoeren teaches or suggests a method comprising migrating the unbound data structure associated with the connection to the selected server *in a manner transparent to the client*.

As argued above with respect to Claim 1, Applicant respectfully submits that Snoeren teaches away from a method comprising migrating the unbound data structure associated with the connection to the selected server in a manner transparent to the client, as the two hosts described in Snoeren must collaborate in migrating the connection. Also, similar to Claim 1, the Office Action admitted that Aversa does not disclose "migrat[ing] the unbound data structure associated with the connection to the selected [server.]" Office Action, p. 8, 13. Applicant respectfully submits that withdrawal of the 35 U.S.C. § 103(a) rejection with respect to Claim 16 is merited.

Rejected Claims 17, 18, 22, 40-42, and 63 depend from Claim 16. Applicant respectfully submits that Claims 17, 18, 22, 40-42, and 63 are allowable at least by virtue of this dependency as well as by virtue of the other limitations set forth therein. In particular, with respect to Claim 63, neither Aversa nor Snoeren teaches or suggests that the method is performed by an intelligent network interface controller.

Accordingly, Applicant respectfully submits that Claims 16-18, 22, 40-42, and 63 are patentable over the cited prior art and respectfully requests withdrawal of the rejection of these claims under 35 U.S.C. § 103(a).

Claims 25-27, 46-48, and 65

The Office Action recited various portions of Aversa and Snoeren as applying to the features in Claim 25, with substantially the same reasoning as for Claim 10. Office Action, p. 13. Applicant respectfully disagrees, and submits that neither Aversa nor Snoeren teaches or suggests a method comprising selectively dissociating the application of the first computing device from the data structure and subsequently outputting a reference to the data structure associated with the connection *in a manner transparent to the client*.

As argued above with respect to Claim 1, Applicant respectfully submits that Snoeren teaches away from a device that migrates connections in a manner transparent to the client, as the two hosts described in Snoeren must collaborate in migrating the connection. Also, similar to Claim 1, the Office Action admitted that "Aversa does not expressly disclose selectively dissociating the application of the first computing device from the data structure and subsequently outputting a reference to the data structure associated with the connection[.]" Office Action, p. 12. Therefore, Applicant respectfully submits that withdrawal of the 35 U.S.C. § 103(a) rejection with respect to Claim 25 is merited.

Rejected Claims 26, 27, 46-48, and 65 depend from Claim 25. Applicant respectfully submits that Claims 26, 27, 46-48, and 65 are allowable at least by virtue of this dependency as well as by virtue of the other limitations set forth therein. In particular, with respect to Claim 65, neither Aversa nor Snoeren teaches or suggests that the first computing device is an intelligent network interface controller.

Accordingly, Applicant respectfully submits that Claims 25-27, 46-48, and 65 are patentable over the cited prior art and respectfully requests withdrawal of the rejection of these claims under 35 U.S.C. § 103(a).

Claims 53, 54, 57, and 67

The Office Action rejected Claim 53 for substantially the same reasons as Claims 10 and 37. Office Action, p. 18. Applicant respectfully disagrees, and submits that neither Aversa nor Snoeren teaches or suggests subsequently outputting a reference to the data structure associated with the connection to a second server for associating an application of the second server to the data structure associated with the connection in a manner *transparent to the client*.

As argued above with respect to Claim 1, Applicant respectfully submits Snoeren teaches away from a computer-readable memory medium containing instructions for controlling a processor of a first server that migrates connections in a manner *transparent to the client*, as the two hosts described in Snoeren must collaborate in migrating the connection. Also, similar to Claim 1, the Office Action admitted that "Aversa does not expressly disclose selectively dissociating the application of the first computing device from the data structure and subsequently outputting a reference to the data structure associated with the connection[.]" Office Action, p. 12. Therefore, Applicant respectfully submits that withdrawal of the 35 U.S.C. § 103(a) rejection with respect to Claim 53 is merited.

Rejected Claims 54, 57, and 67 depend from Claim 53. Applicant respectfully submits that Claims 54, 57, and 67 are allowable at least by virtue of this dependency as well as by virtue of the other limitations set forth therein. In particular, with respect to Claim 67, neither Aversa nor Snoeren teaches or suggests a computer-readable memory medium wherein the first server comprises an intelligent network interface controller, and the processor of the first server is a processor of the intelligent network interface controller.

Accordingly, Applicant respectfully submits that Claims 53, 54, 57, and 67 are patentable over the cited prior art and respectfully requests withdrawal of the rejection of these claims under 35 U.S.C. § 103(a).

Rejections Based on Aversa in View of Boucher Under 35 U.S.C. § 103(a)

Claims 4-6, 34, and 61

The Office Action recited various portions of Aversa and Boucher as applying to the features of Claim 4. Applicant respectfully disagrees, and submits that neither Aversa nor Boucher teaches or suggests a first computing device configured to selectively encapsulate the packet and forward the encapsulated packet *to a second computing device* in a manner *transparent to the client*, wherein the encapsulated packet *includes a reference to a connection endpoint* associated with the packet.

Aversa discloses a load-balancing system that distributes client requests among a collection of servers using a technique called Distributed Packet Rewriting. Aversa, p. 3. As cited in the Office Action, when a first server in Aversa forwards a packet to a second server, the first server encapsulates the packet using IP-IP encapsulation. Office Action, p. 21, citing Aversa, pp. 4-5. Applicant respectfully submits that this does not teach or suggest an encapsulated packet that *includes a reference to a connection endpoint*. The encapsulated packet as claimed in the current invention is superior to IP-IP encapsulation, as it includes additional information that improves efficiency. See Specification, para. 248.

Boucher discloses a system for streamlining the transmission of large network messages by providing a "fast-path" that avoids protocol processing for large, multi-packet messages. Boucher, Abstract. The purpose of the disclosed system is to streamline conventional communications between a single server and a single client across a network. See Boucher, Fig. 12. Boucher does contemplate transferring a communication control block between a host and an integrated communication processing device. Boucher, Col. 5, ln. 10-17, 38-41. However, Boucher does not teach or suggest performing this transfer via the encapsulation described by the current invention, nor does it teach or suggest performing this transfer to a second computing device. Therefore, Applicant respectfully submits that Boucher does not teach

or suggest selectively *encapsulating a packet* and forwarding the encapsulated packet *to a second computing device* in a manner transparent to the client.

Since the prior art fails to teach or suggest all of the features of Claim 4, Applicant respectfully submits that withdrawal of the 35 U.S.C. § 103(a) rejection with respect to Claim 4 is merited. Rejected Claims 5, 6, 34, and 61 depend from Claim 4. Applicant respectfully submits that Claims 5, 6, 34, and 61 are allowable at least by virtue of this dependency as well as by virtue of the other limitations set forth therein. In particular, with respect to Claim 61, neither Aversa nor Boucher teaches or suggests that the first computing device is an intelligent network interface controller.

Accordingly, Applicant respectfully submits that Claims 4-6, 34, and 61 are patentable over the cited prior art and respectfully requests withdrawal of the rejection of these claims under 35 U.S.C. § 103(a).

Claims 19-21, 43, and 64

The Office Action rejected Claim 19 using substantially the same reasoning as for Claim 4. Office Action, p. 22. Applicant respectfully disagrees. As argued above with respect to Claim 4, Applicant respectfully submits that neither Aversa nor Boucher teaches or suggests a method in which a first computing device is configured to selectively encapsulate the packet and forward the encapsulated packet *to a second computing device* in a manner *transparent to the client*, wherein the encapsulated packet *includes a reference to a connection endpoint* associated with the packet. Applicant thus respectfully submits that withdrawal of the 35 U.S.C. § 103(a) rejection with respect to Claim 19 is merited.

Rejected Claims 20, 21, 43, and 64 depend from Claim 19. Applicant respectfully submits that claims 20, 21, 43, and 64 are allowable at least by virtue of this dependency as well as by virtue of the other limitations set forth therein. In particular, with respect to Claim 64, neither Aversa nor Boucher teaches or suggests that the first computing device is an intelligent network interface controller.

Accordingly, Applicant respectfully submits that Claims 19-21, 43, and 64 are patentable over the cited prior art and respectfully requests withdrawal of the rejection of these claims under 35 U.S.C. § 103(a).

Rejections Based on Aversa and Boucher in View of Snoeren Under 35 U.S.C. § 103(a)

Claims 49-52 and 66

The Office Action recited various portions of Aversa, Boucher, and Snoeren as applying to the features of Claim 49. Office Action, p. 23-25. Applicant respectfully disagrees, and submits that neither Aversa, Boucher, nor Snoeren teaches or suggests *encapsulating the packet* and forwarding the encapsulated packet *to a second server* in a manner *transparent to the client*, the encapsulated packet *including a reference to the associated connection endpoint* bound to the socket of the application of the second server.

As argued above with respect to Claims 1 and 4, Applicant respectfully submits that the combination of Aversa, Boucher, and Snoeren do not teach or suggest these features. While Aversa discloses IP-IP encapsulation, it does not teach or suggest the superior encapsulation of the current invention that includes *a reference to the associated connection endpoint*. Also, while Boucher discloses transferring a communication control block between a host and an integrated communication processing device, it does not teach or suggest including that information in an *encapsulated packet* and forwarding it *to a second server*. Finally, while Snoeren discloses migrating a TCP connection, it does not teach or suggest doing so in a manner *transparent to the client*.

Since the prior art fails to teach or suggest all of the features of Claim 4, Applicant respectfully submits that withdrawal of the 35 U.S.C. § 103(a) rejection with respect to Claim 49 is merited. Rejected Claims 50-52 and 66 depend from Claim 49. Applicant respectfully submits that Claims 50-52 and 66 are allowable at least by virtue of this dependency as well as by virtue of the other limitations set forth therein. In particular, with respect to Claim 66, neither Aversa, Boucher, nor Snoeren teaches or suggests that the first server comprises an intelligent

network interface controller, and the processor of the first server is a processor of the intelligent network interface controller.

Accordingly, Applicant respectfully submits that Claims 49-52 and 66 are patentable over the cited prior art and respectfully requests withdrawal of the rejection of these claims under 35 U.S.C. § 103(a).

Claims 55 and 56

The Office Action rejected Claim 55 for substantially the same reasons as Claims 11 and 36, and rejected Claim 56 for substantially the same reasons as Claims 12 and 36. Applicant respectfully disagrees. Claims 55 and 56 depend from Claim 53. As argued above, Applicant respectfully submits that Claim 53 is patentable over the cited prior art. Therefore, Applicant respectfully submits Claims 55 and 56 are allowable at least by virtue of this dependency as well as by virtue of the other limitations set forth therein. Accordingly, Applicant respectfully submits that Claims 55 and 56 are patentable over the cited prior art and respectfully requests withdrawal of the rejection of these claims under 35 U.S.C. § 103(a).

Claims 58 and 68

The Office Action recited various portions of Aversa, Boucher, and Snoeren as applying to the features of Claim 58. Applicant respectfully disagrees, and submits that neither Aversa, Boucher, nor Snoeren teaches or suggests a first server configured to, when the first server is not selected to service the client, migrate the data structure associated with the connection in a manner *transparent to the client*.

The Office Action admitted that neither Aversa nor Boucher expressly disclose that when the first server is not selected to service the client, to migrate the data structure associated with the connection. Office Action, p. 28. Further, as argued above with respect to Claim 1, Snoeren teaches away from the claimed subject matter, as Snoeren discloses migrating an active TCP connection in a way that requires the collaboration of both the client and the server, whereas Claim 58 recites a first server that performs this migration in a manner *transparent to the client*.

Since the prior art fails to teach or suggest all of the features of Claim 58, Applicant respectfully submits that withdrawal of the 35 U.S.C. § 103(a) rejection with respect to Claim 58 is merited. Rejected Claim 68 depends from Claim 58. Applicant respectfully submits that Claim 68 is allowable at least by virtue of this dependency as well as by virtue of the other limitations set forth therein. In particular, neither Aversa, Boucher, nor Snoeren teaches or suggests an intelligent network interface controller comprising the memory, the network protocol stack, and the module.

Accordingly, Applicant respectfully submits that Claims 58 and 68 are patentable over the cited prior art and respectfully requests withdrawal of the rejection of these claims under 35 U.S.C. § 103(a).

CONCLUSION

In view of the foregoing remarks, Applicant submits that all claims are in patentable condition and respectfully requests an early notice to that effect. The Examiner is requested to contact Applicant's attorney at the number provided below should any questions or issues remain.

Respectfully submitted,

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